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Training need assessment of Maize growers for the production of Maize in Tehsil Sahiwal, Punjab Pakistan

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ABSTRACT

Maize occupies a distinct place in the existing cropping system of Pakistan. It provides good economic returns the average per hectare yield of maize is 2003kg/ha as against its potential yield 6173kg/ha. Our growers have potential to produce good quality and quantity of maize it is possible if farmers are properly trained in different training aspects of maize production and protection. Keeping this in view the present research study was conducted to determine the training needs of maize growers in Tehsil Sahiwal. Tehsil Sahiwal has 5 markaz out of two markaz were selected purposively on the basis of the area under maize cultivation, from each selected markaz 3 union councils were selected randomly From each selected UC 2 villages were selected randomly thus by making a total 12 villages. List of 312 maize growers of these 12 villages were obtained from Assistant Director Agriculture (Agriculture Extension wing). Growers of 12 selected villages were served as study population from this population a sample size of 144 maize growers was selected with the help of website survey system.com. A well-structured interview schedule was prepared for the data collection. The collected data were analyzed by computer software Statistical Package for Social Sciences SPSS. T Statistic showed

that respondents had more training needs in all component of critical stages for irrigation flowering stages at stage of pollination and at milky stage it was noticed that all indicator of weeds and their chemical control had highly significant different in favor of required level of competencies. It means respondent had less knowledge about weeds control so they required more training needs in the field of weeds control. T value 143.5 further showed a highly significant difference between possessed and required competencies related to use of soil management kits in favor of required level of competencies. T value 6.1 indicated a highly significant difference between possessed and required competencies related to android apps in favor of required level of competencies a fair majority 84.4 % of farmers needed availability of labor when required three quarter 75.0% of respondent needed transparency in marketing system a great majority 88.2% of the respondent needed construction of local markets a clear majority 83.3% of farmers needed construction of shortage godam and great majority 92.2% of respondent needed provision of turbine run by solar system an over whelming majority 97.2% of respondent told that agriculture department must provide heavy machinery for production of maize. A clear majority of 97.9% of the respondent reported what trained staff should arrange workshop on training regarding maize production a simple majority 68.1% of them told that staff should held more farm visit.

Keywords: Imbalanced nourishment, Fowl feed, Mounting nations, despicable sowing techniques

1. INTRODUCTION

Population of world is rising rapidly and larger piece of masses is challenging inadequate and imbalanced nourishment. Agricultural experts are making an effort to meet the needs of these people (Thirtle et al., 2003). As resources are decreasing and population is extending, the plant specialists are focusing on upgrading practices for agricultural improvements (Lipton, 2001).

Main focus of our governments is the maximization in agricultural production because this provide raw material for preparing a variety of commodities. Minimization of destitution and arrangement of work opportunity is the crucial part of agriculture segment in Pakistan. (Ahmad, 2011) Maize has 3rd positions in our country. It is a critical main harvest popular for numerous nations. Corn is cultivated twice in a year and involves well place in trimming plan. This one is utilized for instance crude material for various industries. Its iota holds around 9% proteinaceous, 4% fat and 73% carbohydrates (Balconi et al., 2007).

Maize contributes 20% of the protein in a chicks and is generally utilized as oat grain as the meal of seriously raised poultry. One purpose behind the broad utilization of maize is its utilization in chick, livestock and aqua animals. One explanation behind the upturn underway in the past ten years is that there is a perception in the encourage growers that this has a high nutritious incentive for domesticated animals, making it remarkable for usage in fowl feed. Maize have high starch, protein, fiber and oil content (Song et al., 2004).

In the year 2015-16, generation of maize harvest diminished as of 0.4944 billion tons to 0.4695 million tons from a zone of 1130000 hectares. This depicts that production of corn in Pak is low when contrasted with other nations (Ali et al., 2012). Diverse imperatives are included in declining the production, for example, uncalled for sowing time, absence of appropriate apparatus, ordinary strategies for sowing, ignorance from present day procedures, exhaustion of supplements in soil, imbalanced utilization of fertilizers, despicable sowing techniques, weed invasion, determination of assortment unsatisfactory to the given condition and parcel of other from sowing to reaping of the harvest. Among these elements every one of these elements are exceptionally imperative that abatement the development and creation of maize (Naheed et al., 2016).

Adequacy of instruction with respect to expansion of maize development has now been examined in focal Punjab. Expansion Field Staff is utilized to instruct agriculturists with respect to new strategies and advances. After effect of such reviews uncover that gathering exchanges taken after by addresses and exhibition used to be the powerful techniques. In correlation battle by means of automatic media stayed not observed to utilize by ranchers (Arshad et al., 2008).

Alam (2000) stated that several factors like ill-timed irrigation, weeding and the poor quality of seed, high price of the fertilizer, late sowing of crop and the irrigation losses were key reasons of low yield. The production of major crops in Pakistan was less as equated to the other mounting nations. There were a significant gap amongst the probable yield and the actual yield. This can be lessened by the improved production expertise for the main agri procedures i.e. crop harvesting.

Wekesa et al., (2003) reported numerous of the issues stated by the growers due to which growers were not willing to adopt the recommended production technologies of maize crop and these factors include high cost of inputs, highly cost and non-available fertilizers, poor availability of better quality cultivars, presence of skillful and the trained labor and poor use of pesticides. Some other factors were mentioned here like lack of capital sources, disapproving and the harsh climatic condition and limited supply of workers.

Although Mwangi et al., (2010) determined the adoption of improved corn grain and fertilizer adoption, women-funded households reported fewer adopters of this technology. Small animal numbers, extension services, and training periods were positive with respect to the adoption of improved corn seeds by most males, and radio ownership was positively associated with the adoption of mineral fertilizers in male households (Sidduiqi and Mirani, 2012). The number of livestock, training courses, extended services and corn did not affect the adoption of corn seeds or fertilizers for households with female heads.

Tahir et al., (2011) analyzed that In general, 90% of corn is used in feed and other industrial products. Pakistan's climate and soil conditions were very good, but production per hectare is very low compared to the world's corn growing countries. You can see in the table below. There were many reasons such as infectious weeds, populations, late sowing and climate change.

Yadav et al., (2011) investigated that while sowing corn crops in (India), farmers face various problems such as shorter availability or inaccessibility of seed, inappropriate irrigation facilities, fertilizer pollution, less availability of manure for livestock farms, etc. Understand the Restrictions on the scientific cultivation practices of maize to increase productivity. The study was conducted in two selectively selected.

2. MATERIALS AND METHODS

Sahiwal division includes three areas to be specific Sahiwal, Pakpattan and Okara. Sahiwal is important region of Punjab from farming perspective. The territory of area Sahiwal is 3201 sq. km. Region Sahiwal contains 2 tehsils to be specific Sahiwal and Chichawatni. The aggregate zone of tehsil Sahiwal is 1867 sq. km. (Govt, of the Punjab, 2010). This territory is essential for maize development because of suitable atmosphere and soil conditions. The backbone of the area is connected with farming and with significant harvests like wheat, cotton, maize and sugarcane. The bureau of horticulture (expansion) under the supervision of the Executive District Officer (EDO) is occupied to teach the ranchers in better harvest generation (Distt. Govt. Sahiwal, 2014).

Testing is the way toward choosing units (individuals, associations) from a populace of intrigue so that by concentrate the specimen we may decently sum up our outcomes back to the populace from which they were picked (Trochim, 2006). There are 5 markaz of farming division (augmentation wing) to be specific Kamirwala, Burgwala, Noorshah, Harrapa and Sahiwal which covers tehsil Sahiwal, out of which 2 markaz were chosen purposively on the premise of zone under maize development. From each chose markaz 3 union gatherings were chosen haphazardly. From each of the chose UC 2 towns were chosen haphazardly in this way by making an aggregate of 12 towns. Rundown of 312 maize cultivators of these 12 towns was acquired from Assistant Director Agriculture office, Department of Agriculture (Agri. Augmentation wing). Rundown of maize producers of 12 chose towns were study populace. From this populace, An example size of 144 maize cultivators is chosen by the assistance of programming test estimate number cruncher study framework. From every town 12 ranchers were chosen haphazardly.

The most imperative specialty of factual work is information gathering. The information were gathered in 15 days by the analyst in a vis-à-vis circumstance. Every one of the respondents were met actually.The information were broke down through PC programming Statistical Package for Social Sciences (SPSS), the rates, recurrence, mean, standard deviation and t-insights were worked out for elucidation, discourse, reaching inferences and making applicable proposals.

3. RESULTS AND DISCUSSION

The general target of this review was to decide “training need assessment of maize growers for the production of maize in Tehsil Sahiwal”. Investigation and translation of information are the most vital strides in logical research. Without these means speculation and expectation can't be accomplished which is the objective of logical research. In this section, an endeavor has been made to talk about, dissect and decipher the information keeping in mind the end goal to reach determination and figure proper recommendations in the light of the outcomes acquired.

Table 1 Possessed and required level of competencies of the respondents regarding land preparation, time of sowing and sowing methods

Land preparation	Possessed level of competencies			Required level of competencies			T-value	P-value
	W.S.	Mean	S.D.	W.S.	Mean	S.D.		
Land preparation Plough the land twice after crop harvest to bury stubbles and weeds. After first irrigation plough the land	296	2.06	.671	313	2.17	.831	-.933	.353^{NS}

twice at proper moisture. Plank immediately after ploughing. Use chisel plough after 3-4 years to break plougpan.								
Time of sowing								
20 Jan-20 Feb (spring crop)	291	2.04	.783	312	2.17	.845	-.973	.332^{NS}
15 july-10 august (Khareef crop)	289	2.01	.766	326	2.26	.861	-1.915	.058*
Sowing methods								
Ridge sowing Dibbling on ridge(R-R=75cm) & (P-P=25cm)	301	2.10	.595	325	2.26	.773	-1.494	.137^{NS}
Flat sowing Single row cotton drill or maize planter(R-R=75cm) & (P-P=25cm)	174	1.21	.408	380	2.65	.631	-18.56	.000**

*** = Significant**

**** = Highly-Significant**

Table 1 represents the possessed and required level of competencies of the respondents regarding land preparation, time of sowing and sowing methods. T-value (0.933) shows a non-significant difference between possessed and required level of competencies regarding land preparation (After first irrigation plough the land twice at proper moisture. Plank immediately after ploughing. Use chisel plough after 3-4 years to break ploug pan), while means values (possessed level = 2.06 and required level = 0.217) indicating a little difference between possessed level and required level of competencies in favour of required level.

T-value (0.973) also shows a non-significant difference between possessed and required level of competencies regarding time of sowing (20 Jan-20 Feb (spring crop), while T-value (1.915) shows a significant differences between possessed and required level of competencies regarding time of sowing (15 july-10 august for Khareef crop) in favour of required level of competencies.

T-value (1.494) also shows a non-significant difference between possessed and required level of competencies regarding sowing method (Ridge sowing: Dibbling on ridge (R-R=75cm) & (P-P=25cm), while T-value (18.56) shows a highly significant differences between possessed and required level of competencies regarding sowing method (Flat sowing: Single row cotton drill or maize planter R-R=75cm & P-P=25cm in favour of required level of competencies.

It was concluded that selected farmers were required more training needs in the field of sowing time (15 july-10 august for Khareef crop) and sowing method (Flat sowing: Single row cotton drill or maize planter R-R=75cm & P-P=25cm.

Table 2 Possessed and required level of competencies of the respondents regarding seed rate and seed treatment

Seed	Possessed level of competencies			Required level of competencies			T-value	P-value
	W.S.	Mean	S.D.	W.S.	Mean	S.D.		
Seed rate for drill sowing 12-15(Kg/Acre)	249	1.88	.747	335	2.33	.783	-3.69	.000**
Seed rate for manual or hand sowing 8-10 (Kg/Acre)	277	1.92	.702	327	2.27	.734	-3.28	.001**
Seed rate for synthetic varieties 55-60kg/acre	150	1.04	.201	428	2.97	.165	-66.5	.000**
Seed treatment								
Imidacloprid 70 WS 50ml/acre. Vita wax 2gm/kg. Confidor 200 Sl 250ml/acre.	193	1.34	.504	408	2.83	.442	-21.8	.000**

**** = Highly-Significant**

Table 2 represents the possessed and required level of competencies of the selected farmers regarding seed rate and seed treatment. T-value (3.69) shows a highly-significant difference between possessed and required level of competencies regarding "Seed rate for drill sowing 12-15 (Kg/Acre)" in favour of required level, while T-value (3.28) shows a highly significant difference between possessed and required level of competencies regarding "Seed rate for manual or hand sowing 8-10 (Kg/Acre)" in favour of required level of competencies. T-value (66.5) reveals that a highly significant difference between possessed and required level of competencies regarding "Seed rate for synthetic varieties 55-60kg/acre" in favour of required level. Similarly, T-value (21.8) shows a highly significant difference between possessed and required level of competencies regarding seed treatment in favour of required level.

It was found that selected farmers were required more training needs in the field Seed rate for drill sowing 12-15 (Kg/Acre), Seed rate for synthetic varieties 55-60 kg/acre and seed treatment. While, selected farmers had more possessed level of competencies in the field of Seed rate for manual or hand sowing 8-10 (Kg/Acre) as compared to required level.

Table 3 Possessed and required level of competencies of the respondents regarding fertilizer

Fertilizer	Possessed level of competencies			Required level of competencies			T-value	P-value
	W.S.	Mean	S.D.	W.S.	Mean	S.D.		
Amount of DAP used (1-2.5-Bags/Acre)	172	1.19	.397	414	2.88	.332	-29.39	.000**
Amount of Potash used (1,2Bags/Acre)	144	1.00	.000	426	2.96	.201	-117.1	.000**
Amount of Urea used (3-4.5 Bags/Acre)	191	1.33	.471	362	2.51	.719	-12.4	.000**
At sowing time DAP(At sowing time) Potash (At sowing time) Urea(1/5 part)	268	1.87	.821	314	2.18	.987	-2.17	.032*
Urea								
When Plant height become 1.5 feet (1 bag /acre)	212	1.47	.810	395	2.74	.498	-11.91	.000**
When plant height 2.5-3 feet(1 bag/acre)	221	1.53	.719	390	2.71	.688	-10.56	.000**
At flowering stage (1 bag/acre)	169	1.15	.361	411	2.85	.354	-44.4	.000**

*** = Significant**

**** = Highly-Significant**

Table 3 denotes that possessed and required level of competencies of the respondents regarding fertilizer. T-statistics shows in above table that indicators of fertilizer i.e. 'Amount of DAP used (1-2.5-Bags/Acre)', 'Amount of Potash used (1,2Bags/Acre)', 'Amount of Urea used (3-4.5 Bags/ Acre)', , 'Urea: When Plant height become 1.5 feet (1 bag /acre)', 'Urea: When plant height 2.5-3 feet(1 bag/acre)', and 'Urea: At flowering stage (1 bag/acre), had highly significant difference between possessed and required level of competencies in favour of required level. 'At sowing time: DAP (At sowing time), Potash (At sowing time)&Urea (1/5 part)',had significant difference between possessed and required level of competencies in favour of required level. 'Urea: When Plant height become 1.5 feet (1 bag /acre)', 'Urea: When plant height 2.5-3 feet (1 bag/acre)', so, farmers in the study area were required more training needs in the field of utilization of fertilizer.

Table 4 Possessed and required level of competencies of the respondents regarding irrigation

Irrigation	Possessed level of competencies			Required level of competencies			T-value	P-value
	W.S.	Mean	S.D.	W.S.	Mean	S.D.		
At least 6-8 irrigations	190	1.32	.622	390	2.71	.590	-13.8	.000**

First irrigation after 3-4 days (drill sowing)	174	1.21	.408	362	2.52	.501	-20.6	.000**
First irrigation after germination (ridge sowing)	194	1.35	.607	392	2.72	.585	-14.2	.000**
Irrigation at vegetative phase. (when required)	229	1.60	.747	366	2.53	.759	-7.6	.000**
Critical stages for irrigation								
At flowering stage	214	1.49	.844	368	2.54	.844	-7.5	.000**
At stage of pollination	156	1.08	.401	424	2.94	.230	-36.6	.000**
At milky stage	160	1.11	.460	422	2.93	.305	-28.9	.000**

**** = Highly-Significant**

It is indicated in table 4 that possessed and required level of competencies of the respondents regarding irrigation. T-statistics shows in above table that three out of our indicators of irrigation i.e. 'At least 6-8 irrigations', 'First irrigation after 3-4 days (drill sowing)', 'First irrigation after germination (ridge sowing)' had significant difference between possessed and required level of competencies in favour of required level. While, the selected farmers had more required level competency in "irrigation at vegetative phase: when required". So, they had less training need in this field. T-statistics further shows that the respondents had more training needs in all components of Critical stages for irrigation i.e. at flowering stage, at stage of pollination and at milky stage.

Table 5 Possessed and required level of skills of the respondents regarding maize production

Skills	Possessed level of competencies			Required level of competencies			T-value	P-value
	W.S.	Mean	S.D.	W.S.	Mean	S.D.		
Land Preparation	259	1.79	.860	369	2.56	.687	-6.2	.000**
Use of soil management kits	148	1.03	.165	432	3.00	.000	-143.5	.000**
Soil management	218	1.51	.861	362	2.51	.861	-7.0	.000**
Soil Sampling	167	1.16	.368	428	2.97	.235	-51.0	.000**
Water Sampling	150	1.04	.261	428	2.97	.235	-48.0	.000**
Operate farm machinery	215	1.49	.690	382	2.65	.693	-10.5	.000**
Maintenance of implements	154	1.07	.305	410	2.85	.432	-32.7	.000**
Crop rotation	171	1.18	.386	432	3.00	.000	-56.6	.000**
Seed treatment	204	1.41	.493	397	2.76	.430	-19.1	.000**
Android Apps.	225	1.56	.825	345	2.40	.821	-6.1	.000**

**** = Highly-Significant**

It is represented in Table 5 that possessed and required level of skills of the respondents regarding maize production. T-value (6.2) shows a highly significant difference between possessed and required competencies related to land preparation in favor of required level of competencies. T-value (143.5) further shows a highly significant difference between possessed and required competencies related to use of soil management kits in favor of required level of competencies. T-value (7.2) shows a highly significant difference between possessed and required competencies related to soil management in favor of required level of competencies. T-value (51.0) depicts a highly significant difference between possessed and required competencies related to use of soil sampling in favor of required level of competencies. T-value (48.0) shows a highly significant difference between possessed and required competencies related to water sampling in favor of required level of competencies. T-value (10.5) indicates a highly significant difference between possessed and required competencies related to operate farm machinery in favor of required level of competencies. T-value (32.7) shows a highly significant difference between possessed and required competencies related to maintenance of implements in favor of required level of competencies. T-value (56.6) also shows a highly significant difference between possessed and required competencies related to crop rotation in favor of required level of competencies. T-value (19.1) shows a highly significant difference between possessed and required competencies related to seed treatment in favor of required level of competencies. T-value (6.1) shows a highly significant difference between possessed and required competencies related to

android Apps in favor of required level of competencies. So, it is clear from the above results that the respondents had less possessed level of competencies in skills related to land preparation, use of soil management kits, soil management, soil sampling, water sampling, operate farm machinery, maintenance of implements, crop rotation, seed treatment and android apps and they had more training needs in these field.

Table 6 Distribution of the respondents according to their needs for maize production

Needs	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Campaigns by agriculture department for training	62	43.1	82	56.9
Training for pests control	62	43.1	82	56.9
Training for disease control	62	43.1	82	56.9
Availability of inputs at subsidized rate	140	97.2	4	2.8
Patterned adulteration of pesticides	127	88.2	17	11.8
Cross banned adulteration of fertilizer	106	73.6	38	26.4
Proper transportation facilities	106	73.6	38	26.4
Proper marketing facilities	123	85.4	21	14.6
Checked monopoly of middle man	121	84.0	23	16.0
Storage facilities	123	85.4	21	14.6
Availability of labor when require	123	85.4	21	14.6
Provision of good quality seeds bye Government	127	88.2	17	11.8
Transparency in marketing system	108	75.0	36	25.0
Construction of local markets	127	88.2	17	11.8
Construction of storage godam	120	83.3	20	13.8
Provision of turbine run by solar system	130	92.2	14	9.72

Table 6 represents the respondent's needs for maize production. Table shows that 43.1 percent of the respondents needed in campaigns by agriculture department for training, another 43.1 percent of them needed training for pests control and further 43.1 percent of them needed training for disease control. Majority of the respondents needed availability of inputs at subsidized rate (97.2%), patterned adulteration of pesticides (88.2%), cross banned adulteration of fertilizer (73.6%), proper transportation facilities (73.6%), proper marketing facilities (85.4%), checked monopoly of middle man (84.0%), storage facilities (85.4%), provision of good quality seeds bye government (88.2), transparency in marketing system (75.0%), construction of local markets (88.2)%, construction of storage godam (83.3%) and provision of turbine run by solar system (92.2%).

Suggestions of the selected maize growers regarding training needs

- Trained staff should arrange workshop on training regarding maize production.
- Staff must hold more farm visits.
- Trainings should be provided by method demonstration.
- The EFS (Extension Field Staff) must arrange regular meetings with farmers.
- Agriculture Dept. should broadcast training programs on social media regarding maize production.
- Extension publications regarding agriculture must be provided to literate farming community.

- Govt. must pass strict laws and penalties for the dealers which are involved in adulteration of inputs.
- Agriculture Department must provide heavy machinery for production of maize.

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